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a ¹ "Improvements relating to Carton Filling Devices"

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a ² This invention is concerned with means for inserting objects being carried on a conveyor into cartons which move along with the conveyor. A standard mechanism for this purpose has a series of pushers which are moved across the conveyor to move objects into the respective cartons, the pushers then being carried around to the start end of the conveyor to locate on to further objects to be inserted. This mechanism has a large number of moving parts (in view of the fact that several independent moving pushers are employed) and occupies a substantial width to one side of the conveyor, for location of the pushers in their extended state.

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a ² According to the present invention there is provided a carton filling device comprising a conveyor for moving cartons and objects to be located in the cartons simultaneously down a track with the objects respectively facing opposite to open ends of the cartons located at one side of the conveyor, and a control arm situated in a start position at the other side of the conveyor and carrying pushers for engaging the objects and pushing them towards and into the open ends of the cartons under control of a control mechanism adapted to move the control arm not only across the conveyor, but also down the conveyor at the same speed of movement as the conveyor and to return the control arm back to the start position once the objects have been inserted into the cartons.

food trays 2 which are to be inserted into open ended
cartons 3. As the conveyor 1 moves (from right to left as
shown in Figure 1) the cartons 3 move at the same speed with
the conveyor. A robotic support body 4 incorporates a
5 control mechanism arranged to move the support body about
suitable rotational axes so as to cause a control arm 5 to
be moved across the conveyor 1. The arm 5 incorporates
paddles 6 which engage with the trays 2 so as to push the
trays towards the cartons 3. The arm 5 is moved across the
10 conveyor 1, but at the same time moves from right to left at
the same speed as for the conveyor 1. The diagonal path
taken by a head 11 of the support body, carrying the arm 5,
is indicated by the broken line 7 as shown in Figures 2 and
3. This results in the trays 2 being pushed fully home into
15 the cartons 3. The arm 5 is then raised and the head 11 is
brought back along the reciprocal path 8 (as shown in Figure
4) until the arm returns to and is lowered into the start
condition as shown in Figure 1. The same operation can then
be employed to move another set of four trays into a
20 subsequent series of four cartons.

50^a 7 The paddles 6 could be designed to be disengaged
appropriately in instances where it is not practical to lad
the trays into the carton, a monitoring device has sensed
that there is an oversize product or a badly formed carton.
25 The robotic arm 10 can be fitted with customised gripper
attachments to facilitate stacking or tiering of products
prior to loading the products into the cartons. The paddles
can incorporate a facility to apply downwards or sideways

